

Claims

[c1] What is claimed is:

1. A method of washing a silicon wafer surface comprising a backside surface and bevel edges, the method comprising:

applying a cleaning composition to the silicon wafer surface for a process time, the cleaning composition comprising:

a first acid for removing copper from the silicon wafer surface;

an oxidizing agent for oxidizing the silicon wafer surface to form an oxide thin film and for oxidizing barrier residue on the bevel edges;

a second acid for removing the oxide thin film and the oxidized barrier residue; and

deionized (DI) water; and

spin-drying the silicon wafer surface.

[c2] 2. The method of claim 1 wherein the first acid is selected from a group consisting of H_2SO_4 , HNO_3 , CH_3COOH , and H_3PO_4 .

[c3] 3. The method of claim 1 wherein the oxidizing agent is selected from H_2O_2 or HNO_3 .

- [c4] 4. The method of claim 1 wherein the second acid is HF.
- [c5] 5. The method of claim 1 wherein the first acid is present in an amount between 10% to 15% by weight; the oxidizing agent is present in an amount between 30% to 35% by weight; and the second acid is present in an amount between 0.5% to 1.0% by weight.
- [c6] 6. The method of claim 1 wherein the barrier residue comprises either TiN or TaN.
- [c7] 7. The method of claim 1 wherein the process time is approximately 30 seconds.